1. An optical communication system comprising an external cavity laser that comprises:

a gain medium comprising an active region, a beam expanding region, a first surface having a reflective face and a second surface having an antireflective layer;

an optical waveguide located adjacent the gain medium such that at least a portion of the electromagnetic energy generated by the active region passes through the beam expanding region and through the antireflective layer into the optical waveguide;

a Bragg grating integral with or coupled to the optical waveguide,

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which even without the presence of coupling optics located between the gain medium and the optical waveguide is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth.

Amend claim 3:

3. The system of claim 1, wherein the cavity has a length of less than 1 cm.

Amend claim 11:

11. An optical communication system comprising an external cavity laser that comprises:

a gain medium comprising an active region, a beam expanding region, a first surface having a reflective face and a second surface having an antireflective layer;

an optical waveguide located adjacent the gain medium such that at least a portion of the electromagnetic energy generated by the active region passes through the beam expanding region and through the antireflective layer into the optical waveguide;

a Bragg grating integral with or coupled to the optical waveguide,

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which even without the presence of coupling optics located between the gain medium and the optical waveguide is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth,

wherein the laser is operated by direct modulation,

wherein the laser is operated in the absence of a temperature-compensating apparatus,

wherein the gain medium comprises a cavity less than 1 cm in length, and

wherein the length of the system is less than 100 km.

Add claim 16:

16. The system of claim 1, wherein the coupling efficiency between the gain medium and the optical waveguide is at least 40%.

Add claim 17:

17. The system of claim 1, wherein the optical communications system comprises a WDM or DWDM system.

B4 cont'd

Add claim 18:

18. The system of claim 11, wherein the coupling efficiency between the gain medium and the optical waveguide is at least 40%.

Add claim 19:

19. The system of claim 11, wherein the optical communications system is a WDM or DWDM system.

Add claim 20:

20. A method to achieve high data rate modulated laser transmissions in an optical network by:

providing an optical laser which includes a gain medium having a reflective face, and further includes an external cavity effectively terminated by a grating having a bandwidth;

providing an optical fiber;

operating the optical laser such that laser radiation is produced in at least two modes within the grating bandwidth;

through the use of a light-expanding region and an antireflective (AR) layer, coupling light between the gain medium and the external cavity such that substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating;

applying a modulation signal to the optical laser, thereby to produce modulated light; and

launching the modulated light into the optical fiber.

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Add claim 21:

21. A multimode laser, comprising:

a gain medium having a reflective face, a beam-expanding region, and an antireflective (AR) layer;

an optical waveguide located adjacent the gain medium such that at least a portion of light output from the gain region passes through the beam-expanding region and through the AR layer into the optical waveguide; and

a grating defined in the optical waveguide, said grating having a bandwidth;

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which, even without the presence of coupling optics located between the gain medium and the optical waveguide, is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth.

Add claim 22:

22. The multimode laser of claim 17, wherein the light output from the gain region is butt-coupled from the AR layer to a cleaved end of said optical waveguide.

Add claim 23:

B4 cont'd

23. The multimode laser of claim 17, wherein the light output from the gain region is modulated by direct modulation.